Amendments to the Claims:

This listing of claims represents the present status of the pending claims in the application:

Listing of Claims:

1. (canceled)

2. (currently amended) A method for measuring the intensity profile of an electron beam, in particular a beam of an electron-beam machining device, in which the electron beam is directed by relative movement between the electron beam and a measuring structure on to different points of the latter which have different back-scattering properties, wherein a stream of electrons scattered in the reverse direction by the measuring structure is measured as a function of the relative movement of the electron beam and the measuring structure and wherein ~~Method according to Claim 1, characterised in that~~ a measuring structure is used which includes at least one opening~~, in particular a slit or a circular hole,~~ which allows the electron beam to pass through.

3. (canceled)

4. (canceled)

5. (canceled)

6. (currently amended) A method for measuring the intensity profile of an electron beam, in particular a beam of an electron-beam machining device, in which the electron beam is directed by relative movement between the electron beam and a measuring structure on to different points of the latter which have different back-scattering properties, wherein a stream of electrons scattered in the reverse direction by the measuring structure is measured as a function of the relative movement of the electron beam and the measuring structure and wherein a measuring structure is used which ~~Method according to Claim 5, characterised in that the raised element~~ is

formed by a needle, which includes at least one back-scattering surface which reflects the electron beam at least partially ~~preferably a metal needle, in particular of a heavy metal such as tungsten~~.

7. (currently amended) Method according to Claim 6, ~~characterised in that~~ wherein the needle is ground at its end.

8. (currently amended) Method according to Claim 6, ~~characterised in that~~ wherein the axis of the needle is disposed parallel to the mean direction of the electron beam.

9. (currently amended) Method according to Claim 2, ~~characterised in that~~ wherein the opening has in at least one direction a cross-sectional length which is shorter than the diameter of the electron beam.

10. (currently amended) Method according to Claim 2[[1]], ~~characterised in that~~ wherein the stream of back-scattered electrons is measured by means of a sensor ring extending ~~which preferably includes a plurality of sensor segments distributed, preferably equidistantly,~~ around the axis of the electron beam.

11. (currently amended) Method according to Claim 2[[1]], ~~characterised in that~~ wherein the relative movement is generated by deflecting the electron beam by means of a magnetic field or an electrical field.

12. (currently amended) Method according to Claim 2[[1]], ~~characterised in that~~ wherein a measuring structure is used which includes a plurality of openings ~~slits and/or holes and/or back-scattering surfaces~~ which are arranged at different distances from the incidence direction of the undeflected electron beam.

13. (currently amended) Method according to Claim 12, ~~characterised in that~~ wherein a measuring structure is used in which the openings ~~slits, holes or back-scattering surfaces~~ are

distributed uniformly in at least one of the radial and/~~or~~ the circumferential directions ~~direction~~.

14. (currently amended) Method according to Claim 13, ~~characterised in that~~ wherein a measuring structure is used in which the openings ~~holes and/or back-scattering surfaces~~ are so aligned that their axis pass through the principal point of the optical system.

15. (currently amended) Method according to Claim 6[[1]], ~~characterised in that~~ wherein the back-scattering surfaces are circular.

16. (canceled)

17. (currently amended) Method according to Claim 2[[1]], ~~characterised in that~~ wherein the relative movement between the electron beam and the measuring structure takes place in two independent directions which lie substantially in a plane disposed perpendicularly to the incidence direction of the undeflected electron beam.

18. (currently amended) Method according to Claim 6[[1]], ~~characterised in that~~ wherein a measuring structure is used which has adjacently to the ~~slits and/or openings and/or~~ back-scattering surfaces a flat surface of a material, ~~in particular graphite,~~ which back-scatters only one of weakly or not at all.

19. (currently amended) Method according to Claim 2[[1]] ~~for measuring the optical system for an electron bean, characterised in that~~ wherein the cross-section of the electron beam is measured at a plurality of ~~slits and/or~~ openings ~~and/or back-scattering surfaces~~ which occupy different positions with respect to the incidence direction of the undeflected electron beam, and is compared to a cross-section of an electron beam as obtained by means of a correctly functioning optical system for an electron beam, and[[~~/or~~]] the imaging properties of the optical system are measured.

20. (currently amended) Method for measuring the intensity profile of an electron beam, in particular a beam of an electron-beam machining device, in which the electron beam is directed by relative movement between the electron beam and a measuring structure on to different points of the latter which have different back-scattering properties, wherein a stream of electrons scattered in the reverse direction by the measuring structure is measured as a function of the relative movement of the electron beam and the measuring structure and wherein a measuring ~~according to Claim 19, characterised in that measuring~~ structure is in the form of a grid, wherein [[~~that~~]] at least a considerable portion of the grid is impinged upon by the electron beam through the relative movement between the electron beam and the measuring structure, wherein the stream of back-scattered electrons as a function of the relative movement is converted into an image of the measuring structure and this image is compared to a reference image of the measuring structure as obtained by means of a correctly functioning optical system for an electron beam.

21. (currently amended) A method for compensating deflection errors of an optical system for an electron beam, wherein [[~~the~~]] imaging properties of the optical system for the electron beam are determined using the method according to Claim 20[[~~19~~]] and at least one controllable component of the optical system is so adjusted that the difference between the actual image and the reference image of the measuring structure is minimised.

22. (currently amended) A measuring structure, ~~in particular~~ for use in a method according to Claim 2[[~~1~~]], characterised in that it has a base which includes at least one opening .

23. (currently amended) Measuring structure according to Claim 22, characterised in that the axis ~~planes of the slits and/or axes~~ of the openings ~~and/or the normals of the back-scattering surfaces~~ pass through a principal point of the optical system.

24. (currently amended) Measuring structure for use in a method according to Claim 6[[~~22~~]], which has a base which carries at least one back-scattering surface, wherein ~~characterised in that~~ the back-scattering surfaces are formed by end faces of the needles ~~which are made preferably of~~

~~metal, in particular of a heavy metal such as tungsten, and are carried by the base~~.

25. (currently amended) Measuring structure according to Claim 24, wherein the needle is ground smooth at its free end~~, preferably substantially parallel to the flat surface of the base~~.

26 (currently amended) Measuring structure according to Claim 22, characterised wherein [[~~that~~]] the flat surface of the base is formed by a material, ~~in particular graphite,~~ which back-scatters one of weakly or not at all.

27. (currently amended) Measuring structure according to Claim 22, which ~~characterised in that it~~ includes back-scattering strips forming a grid and additionally includes at least one back-scattering surface in each of the areas delimited by the edges of the grid meshes.

28. (currently amended) Measuring structure according to Claim 27, wherein ~~characterised in that~~ the back-scattering surfaces are located in each case at the centres of the areas delimited by the edges of the grid[[~~lines~~]].

29. (previously amended) Measuring structure according to Claim 22, characterised by a collector plate located downstream of said measuring structure, viewed in the direction of the beam.

30. (previously amended) An electron-beam machining device, comprising: a measuring structure according to Claim 22, and a back-scattered electrons measuring device arranged in the electron beam path upstream of the measuring structure.

31. (currently amended) Electron-beam machining device according to Claim 30, wherein ~~characterised in that~~ the back-scattered electrons measuring device includes a sensor ring ~~which preferably comprises a plurality of sensor segments distributed, preferably uniformly, in the circumferential direction~~.

32. (currently amended) Electron-beam machining device according to Claim 30, including an ~~characterised in that the~~ optical system which is electronically controlled by means of control signals of a control unit, a memory unit at the same time detecting signals from the back-scattered electrons measuring device as a function of the control signals.

33. (currently amended) Electron-beam machining device according to Claim 32[[~~31~~]], wherein ~~characterised in that~~ the optical system, together with the control unit and the back-scattered electrons measuring device, are designed to generate an image produced by scanning electron microscopy.

34. (currently amended) Electron-beam machining device according to Claim 24[[~~31~~]], wherein ~~characterised in that,~~ in the case of a measuring structure which has an essentially ~~a substantially~~ punctual back-scattering surface, a focusing lens of [[~~in~~]] an optical system for an electron beam~~, a focusing lens~~ is located upstream of a beam deflector unit, viewed in the direction of the beam.

35. (currently amended) Electron-beam machining device according to Claim 24[[~~31~~]], wherein ~~characterised in that,~~ in the case of a measuring structure which has an extensive back-scattering surface, a focusing lens of [[~~in~~]] an optical system for an electron beam~~, a focusing lens~~ is located downstream of a beam deflector unit, viewed in the direction of the beam.

36. (new) Method in accordance with Claim 2, wherein the opening is one of a slit or a circular hole.

36. (new) Method in accordance with Claim 6, wherein the needle is a metal needle.

37. (new) Method in accordance with Claim 36, wherein the metal needle is of a heavy metal such as tungsten.

38. (new) Method in accordance with Claim 6, wherein the back-scattering surface is disposed perpendicularly to the mean direction of the electron beam.

39. (new) Method in accordance with Claim 6 wherein the back-scattering surface has in at least one direction a cross-sectional length which is shorter than the diameter of the electron beam.

40. (new) Method in accordance with Claim 6 wherein the relative movement is generated by deflecting the electron beam by means of a magnetic field or an electrical field.

41. (new) Method in accordance with Claim 6 wherein a measuring structure is used which includes a plurality of back-scattering surfaces which are arranged at different distances from the incidence direction of the undeflected electron beam.

42. (new) Method in accordance with Claim 6 wherein a measuring structure is used in which the back-scattering surfaces are distributed uniformly in at least one of the radial and the circumferential directions.

43. (new) Method in accordance with Claim 6, wherein a measuring structure is used in which the back-scattering surfaces are so aligned that their normals pass through the principal point of the optical system.

44. (new) Method in accordance with Claim 6 wherein the relative movement between the electron beam and the measuring structure takes place in two independent directions which lie substantially in a plane disposed perpendicularly to the incidence direction of the undeflected electron beam.

45. (new) Method in accordance with Claim 18, wherein the material of the flat surface is graphite.

46. (new) Method in accordance with Claim 6 wherein the measuring structure has adjacently to the back-scattering surfaces a flat surface of a material, which back-scatters one of only weakly or not at all.

47. (new) Method in accordance with Claim 46, wherein the material of the flat surface is graphite.

48. (new) Method in accordance with Claim 6 wherein the cross-section of the electron beam is measured at a plurality back-scattering surfaces which occupy different positions with respect to the incidence direction of the undeflected electron beam, and is compared to a cross-section of an electron beam as obtained by means of a correctly functioning optical system for an electron beam, and the imaging properties of the optical system are measured.

49. (new) Method for compensating deflection errors of an optical system for an electron beam, wherein the imaging properties of the optical system for the electron beam are determined using the method according to Claim 48 and at least one controllable component of the optical system is so adjusted that the difference between the actual image and the reference image of the measuring structure is minimised.

50. (new) Method for compensating deflection errors of an optical system for an electron beam, wherein the imaging properties of the optical system for the electron beam are determined using the method according to Claim 20 and at least one controllable component of the optical system is so adjusted that the difference between the actual image and the reference image of the measuring structure is minimised.

51. (new) Measuring structure in accordance with Claim 24, wherein the needles are made from a heavy metal such as tungsten.

52. (new) Measuring structure in accordance with Claim 25 wherein end faces of the needles are substantially parallel to the flat surface of the base.

53. (new) Measuring structure in accordance with Claim 26, wherein the flat surface of the base is formed by graphite.

54. (new) Measuring structure in accordance with Claim 25, wherein the flat surface of the base is formed by graphite.

55. (new) Measuring structure in accordance with Claim 24, which includes back-scattering strips forming a grid and additionally includes at least one back-scattering surface in each of the areas delimited by the edges of the grid meshes.

56. (new) Measuring structure in accordance with Claim 55, wherein the back-scattering surfaces are located in each case at the centres of the areas delimited by the edges of the grid meshes.

57. (new) An electron-beam machining device, comprising: a measuring structure according to Claim 24, and a back-scattered electrons measuring device arranged in the electron beam path upstream of the measuring structure.

58. (new) Electron-beam machining device according to Claim 57, wherein the back-scattered electrons measuring device includes a sensor ring.

59. (new) Electron-beam machining device according to Claim 57, including an optical system which is electronically controlled by means of control signals of a control unit, a memory unit at the same time detecting signals from the back-scattered electrons measuring device as a function of the control signals.

60. (new) Electron-beam machining device according to Claim 59, wherein the optical system, together with the control unit and the back-scattered electrons measuring device, are designed to generate an image produced by scanning electron microscopy.

61. (new) Method in accordance with Claim 2, wherein measuring of the profile of an electron beam is part of one of a method of measuring an optical system for an electron beam and a method of adjusting an optical system for an electron beam.

62. (new) Method in accordance with Claim 6, wherein measuring of the profile of an electron beam is part of one of a method of measuring an optical system for an electron beam and a method of adjusting an optical system for an electron beam.

63. (new) Method in accordance with Claim 20, wherein measuring of the profile of an electron beam is part of one of a method of measuring an optical system for an electron beam and a method of adjusting an optical system for an electron beam.